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A STUDY OF THE RELATIONSHIP OF ASSOCIATIONAL PATTERNS TO ACADEMIC PERFORMANCE AT A STATE UNIVERSITY.

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THE RELATIONSHIP BETWEEN ASSOCIATIONAL PATTERNS AMONG COLLEGE STUDENTS AND ACADEMIC PERFORMANCE ARE STUDIED. THE HYPOTHESES ARE--THE PATTERN OF ASSOCIATIONS IS RELATED TO ACADEMIC PERFORMANCE, AND CHANGE IN ASSOCIATION PATTERNS OVER TIME IS RELATED TO ACADEMIC PERFORMANCE. HIGH ACHIEVING ENTERING FRESHMEN ATTENDING A FRESHMEN ORIENTATION CAMP IN TWO SUCCESSIVE YEARS CONSTITUTED THE SAMPLE. DATA WAS OBTAINED THROUGH QUESTIONNAIRES AND INFORMATION FROM THE REGISTRAR'S OFFICE. THE METHODS OF MEASURING ASSOCIATIONAL PATTERNS WERE--(1) THE VOLUME OF ASSOCIATION OF A GIVEN INDIVIDUAL, (2) SIMILARITY OR DIFFERENCE AMONG ASSOCIATES, AND (3) THE SOCIAL CONTEXT WITHIN WHICH ASSOCIATION TAKES PLACE. SEVERAL CHI-SQUARE ANALYSES WERE MADE. RESULTS ARE DISCUSSED IN TERMS OF VOLUME OF ASSOCIATION AND ACADEMIC PERFORMANCE, ASSOCIATIONAL SIMILARITY, SOCIAL PARTICIPATION IN ACADEMIC PERFORMANCE, AND CLOSURE (RATE OF FORMING ASSOCIATIONS) AND ACADEMIC PERFORMANCE. THE DATA SHOW THAT THERE IS A WEAK RELATIONSHIP BETWEEN THE ASSOCIATIONAL PATTERNS A COLLEGE STUDENT ESTABLISHES AND HIS LEVEL OF PERFORMANCE. FACTORS OTHER THAN ASSOCIATIONAL PATTERNS ENTER STRONGLY INTO THE INDIVIDUAL'S ATTAINMENT OF A PERFORMANCE LEVEL AND TEND TO MASK THE EFFECTS OF ASSOCIATIONAL PATTERNS. (PS)

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The Research Problem

This is a report on a pilot study designed to explore the relationship between associational patterns among college students and academic performance. It has long been assumed by social scientists that interaction patterns, especially those that are well established among human beings affect the performance of various roles. The general assumption is that who people associate with affects their behavior. This hypothesis is most fully exploited in research in juvenile delinquency where a theory of differential association has been developed to account for delinquent behavior. It has been suggested that the performance of college students as measured by their academic averages, or of scores on achievement tests might be related to their associational patterns on the campus. A number of questions arise in connection with the relationship of association patterns and academic performance. Some of these questions are as follows:

Do persons with similar academic performance levels associate with each other?

Do bright students associate with bright students, and dull students with dull students, or is there an intermixing of persons on the college campus?

Do persons with high levels of association differ from those who are relatively isolated in the student body in their level of performance?

Do persons who tend to become quickly integrated into the associational patterns of the University perform differently than those who are slow to become acquainted?

Is membership in organized groups on campus such as sororities and fraternities and other such clubs and groups associated with the level of performance of students?

These and a number of other questions stimulated the study reported in the following pages.

Objectives and Hypotheses

The problem for the study in general was to explore as many facets as possible of the relationship between associational patterns and academic performance. Two general hypotheses guided the study. The first was that the pattern of associations is related to academic performance, and the second that change in association patterns over time is related to academic performance.

Related Literature. Much of the existing literature on group structure is merely descriptive and does not deal systematically with hypotheses concerning the relationships among variables. A much smaller portion of that literature is concerned with associational patterns and deals with relationships among variables. Studies

relating aspects of associational patterns for closed groups to specific educational situations are even more scarce.

Some of the existing studies related to this proposal are summarized below. Although each has some bearing on this research, none deal with the exact problem proposed for this study.

In an article entitled, "High School Social Status, College Plans, and Interest in Academic Achievement: A Panel Analysis," McDill and Coleman examine the relations between status in adolescent college social systems and academic achievement orientations. They find positive college plans and negative orientations toward scholastic achievement more highly related to status gains than those with negative orientations toward achievement and negative college plans. The explanation of this finding lies in the socialization by a set of peers (and consequently peer group associational patterns) which is likely to be away from scholastic achievement but toward college training. College in short, gives adult status but scholastic achievement gives acquiesence and subordination to adults.[1]

Hajda examines alienation from and integration into society, which are considered as general aspects of social and

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[1]Edward McDill and James Coleman, "High School Social Status, College Plans, and Interest in Academic Achievement: A Panel Analysis," American Sociological Review, Vol. 28, December, 1963, p. 905.

cultural participation, in a sample of graduate students. This study suggests that the variation in the intensity of alienation can be explained by the kind of associational patterns the student establishes with non academic people.[2]

In a text entitled Processes of Organization Weiss presents methods for "determining the basic structure of a complex human organization and for describing the distribution of functional activities in such an organization."[3] This work serves as an excellent guide for analyzing associational patterns in organizations and supplies a conceptual scheme for the analysis of such patterns in a variety of situations. It furnishes a methodological framework which can be used to study association patterns among students and therefore is helpful in planning this research.

Bacon, in an unpublished thesis, attempted to determine the patterns of association of members of a closed population. His findings, although inconclusive, suggest that socio-economic likeness tended to become more positively related to association over time than dissimilarity. He also found sex characteristics to be more closely related to association than any other variable.

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[2]Jan Hajda, "Alienation and Integration of Student Intellectuals," American Sociological Review, Vol. 26, October, 1961, p. 758.

[3]Robert Weiss, Processes of Organization. Ann Arbor, Michigan: University of Michigan, 1956, p. v.

The importance of this work lies in its methodology which involves utilization of time intervals to determine change in the number of associations and of establishing measures of social distance. These, procedures, it is felt, have direct relevance to this proposed study.[4]

Newcomb studied the acquaintance process in a population of persons who were total strangers to each other and who were placed in close contact. In studying the process of becoming acquainted, interest was centered on reciprocal scanning on the part of interacting persons. This was scanning of the areas of mutually shared orientations. As the opportunities for repeated scanning were increased, the area of mutually shared orientations became larger and the persons became more and more sure of a larger area of agreements and disagreements as they came to know each other well. Newcomb's research indicates that knowing certain objective variables will allow us to make some predictions concerning the acquaintance process.[5]

Procedure

Each fall, The University of Georgia operates a Freshman

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[4]Abbie Bacon, Jr. Association Patterns Within A Closed Population (unpublished Master's thesis, Louisiana State University, June, 1963).

[5]Theodore M. Newcomb, The Acquaintance Process. New York: Holt, Rinehart and Winston, 1961, p. 261.

Orientation Program at the 4-H Club Center at Rock Eagle. A selected group of entering Freshmen is invited to attend this orientation meeting. The group attending is equally divided between men and women. The Freshmen are housed in cottage-type housing. Each cottage provides dormitory space for twelve individuals and a counselor. The twelve individuals are assigned to rooms; six to a room. Cottages are arranged in a row with the first five containing men, and the second five containing women.

The Freshman students are put through a program of lectures and group activities designed to orient them to campus life during a three-day stay at Rock Eagle. Freshmen invited to attend the orientation center are selected on the basis of their high school record, and represent the most academically qualified group entering the University during that year. They have the highest high school averages and the most impressive records for high school leadership attributes. The orientation program is designed to give special attention to this highly qualified group of entering Freshmen with the hope that they will become campus leaders and aid in the process of integrating other Freshmen into the college community when they return from the orientation camp.

It is considered an honor to be invited to attend the Freshman camp. The University charges a fee for room and board during the time the students are in attendance. This means that every

student invited does not ultimately attend, but that those who do attend are among the group expected to achieve high performance after arriving on the campus.

The Freshmen attending the orientation camp for two successive years are the subjects for this study. The first group attended the orientation program in the fall of 1965, and the second group in the 1966 fall session. Each group of Freshmen was given a pre-camp questionnaire to establish certain facts about their background and their knowledge of other persons attending the camp.* A measure of the number of associates among Freshman campers prior to arriving at Rock Eagle was obtained in both cases. At the end of each day at Freshman camp, the subjects were given a questionnaire to complete which asked them to list the people they had become acquainted with during their time at Rock Eagle, and to fill in certain other data about them. After returning to the campus, during the first week following their entrance into school, similar questionnaires obtaining information on association patterns were administered. Throughout the year similar questionnaires were administered, the last one being administered at the end of the Spring Quarter of their Freshman year. The data for this study then contains information on associates taken at various points and time beginning prior to entrance at the University and ending at the end of the Freshman

* See Appendix for Summary Tables on Student Characteristics.

year.

In addition to the data obtained through questionnaires described above, other data were obtained from student records in the Registrar's office. The questionnaire material contains the information on independent variables, largely associational patterns, while the data obtained from the Registrar's office yields dependent variables or measures of performance.

The questionnaire contained items that permitted computation of associational pattern measures. In addition to this, it contained certain attitudinal items which permitted the computation of two attitude scales; one called the "cosmopolitan-localism scale" adapted from the work of Robert A. Rath, and the other entitled an "optimism-pessimism scale" adapted from the work of Leo Srole. Copies of the questionnaire items used in this study are found in the appendix of this report.

From the Registrar's office, the following measures were obtained on each individual participant in the study.

1) High School Average
2) Verbal College Entrance Score
3) Quantitative College Entrance Score
4) English Achievement Score
5) Math Achievement Score
6) Cumulative Freshman Academic Average

In the case of the first group studied, the Sophomore average was also obtained and used as a measure of performance.

The questionnaire data combined with that obtained from the Registrar's office made it possible to test a wide variety of hypotheses concerning the relationship between academic performance and associational patterns. As each one of these individual hypotheses is tested below, a brief description of the kind of data used in the process of hypothesis testing will be offered.

Analysis of the Data and Findings

The major hypothesis for this research states that there is a relation between academic performance and of association patterns. There are a variety of ways in which association patterns can be measured. Three of these will be used to test this hypothesis. First; one way to measure patterns of association is through measuring the volume of association that a given individual has. Using this measure, it is assumed that the total number of contacts varies among individuals and that one dimension of association is the volume of association. A second way in which association patterns may be measured is in terms of the similarity or difference among persons who associate with each other. In this respect, it can be assumed that some people tend to choose associates that are similar to themselves in various qualities, while others choose to associate with individuals who are different. By comparing

persons who associate with each other it is possible to determine whether similarity with associates is associated with academic performance. A third way to tap the pattern of association variable is through the so-called social-participation dimension. Instead of counting the number of individual associates a person has or dealing with the traits of associates, one can deal with the social context within which association takes place. Thus, some people have a large amount of association within organized groups and associations, while others do not belong to groups and associations and their contacts are made individually. The pattern of association variable can therefore be measured by creating an organizational participation score for an individual and comparing this score to academic performance. In this report, two such participation scores were prepared; one, for participation in high school organizations, and the second for participation in college and university groups. In addition to these participation scores, membership in fraternities and sororities as opposed to non-membership can be considered a dimension of patterns of association.

For purposes of convenience in discussion, these three ways of approaching patterns of association will be given the following labels: (1) Volume of Association, (2) Similarity Among Associates, and (3) Social Participation.

On the basis of these three ways of approaching patterns

of association, the major hypothesis for this research can be translated into three sub-hypotheses: (1) The volume of association is associated with academic performance; (2) Persons with similar performance levels tend to associate with each other; and (3) Social participation is associated with levels of academic performance. Each one of these individual hypotheses will be discussed in light of the findings from this research in the following paragraphs.

Volume of Association and Academic Performance

Each subject for this research was asked at the end of each day during the Freshman Orientation Camp to record the names of every individual with whom he had established an association. Similarly, in the immediate post camp period and during successive intervals throughout the following year ending at the end of the Freshman year, subjects were asked to record the names of individuals with whom they had established association patterns. This made it possible to compute the number of "associates" or "contacts" a given individual had for each one of the applications of the questionnaire.

For purposes of this report, it is impractical to deal with each individual measure of volume of association for each time the questionnaire was administered. Instead, four interview days will be employed. The volume of contact during Freshman Camp at the end of the first day, at the end of the second day, at the end of the

third day, and at the end of one academic year will constitute the data for the study. In other words, figures were computed for purposes of this report on the number of associates each individual had at the end of each day during their stay at Rock Eagle, and then at the end of their Freshman year.

In using associational data, there are several ways in which the number of associates that an individual has can be computed. One way is to count the number of persons he lists as associates on his own individual questionnaire. This means of computing volume of association has the defect of being affected by individual biases. The individual, in filling out his own questionnaire, may be affected by eagerness to show a high volume of contact or by negative attitudes toward the questionnaire process; or by any number of variables that might influence the number of names he lists as associates on his own individual questionnaire. In contrast to this, another way of computing the volume of contact of a given individual is to count the number of times he was listed as an associate by others on their questionnaire. This procedure has the advantage of randomizing insofar as randomization is possible, the biases which affect individual questionnaire performance and making the scores for individuals less subject to personal error. It is this procedure, employing the number of times a person was listed as an associate by others on their questionnaires, that is used as the measure of

volume of contact in this research.

Two other measures were experimented with, but rejected. One was the counting of mutually listed contacts; that is, cases in which both persons listed each other. The other was a synthetic method which employs taking the number of contacts listed by a given individual and adding to it the number listed for him by others and subtracting the number of mutuals; thus arriving at a total volume of contact reported from all sources.

The final decision to use the number of times a person was listed by others as a measure of volume of contact was made on the basis of the argument presented briefly above. The filling out of a questionnaire by a given individual is subject to various kinds of influences unrelated to the hypotheses of this research. If mutual contacts are employed, this same kind of influence still affects the volume of association to a high degree. If the synthetic measure mentioned is employed, the same bias is added into the final measure. It is only the number of times that a person is listed by others which has the advantage of equalizing the biases for each subject. This method was, therefore, employed whenever volume of contact was measured for this study.

In order to test the hypothesis that academic performance as measured by the Freshman average is related to the volume of contact that the subjects had, the following procedures were

developed and used. The Freshman averages were divided up into quartiles, each subject being assigned the scores of (1), (2), (3), and (4) depending on which quartile he fell in on his Freshman average. Similarly, each subject was classified into quartiles according to the number of contacts that they had on the first, second and third day at Freshman camp, and during the post-camp questionnaire period. Again, the subjects were assigned scores of (1), (2), (3), or (4) depending on which quartile they fell in. Tables were then run cross-classifying subjects by their Freshman average quartile, and their volume of contact quartile. From these tables, data were combined so that a series of 2 x 2 tables were constructed in which subjects were classified as to whether they were high or low in their Freshman average, or high or low in their volumes of contact. Instead of using a 4 x 4 quartile table, a 2 x 2 table was necessary because the number of subjects was too small for any given year. Table 1 shows an example of the Chi-Square tables used in the case of the post camp questionnaire period. In year one, 31 of the subjects were both high in their Freshman average and high in their volume of contact. Similarly, 33 were low in both variables, while 16 were low in volume of contact but high in Freshman average and 17 were high in volume of contact but low in Freshman average.

The results of similar Chi-Square tests for the first, second and third day and for the post camp period for the first and second

year are shown in Table 2. In this Table, it can be seen that only the volume of contact in the post camp period for both years was significantly associated with the Freshman average received by subjects. For the first year, a Chi-Square of 10.05, which is significant at better than the .01 level, was obtained; and for the second year a Chi-Square of 5.48, which is significant at the .02 level, was found. The post camp questionnaire, it will be remembered, was given at the end of the Freshman year after some nine months had elapsed since the subjects entered college. Thus, considerable time existed during which they could establish association patterns. Table 2 shows the Chi-Square results for days one, two, and three of the Rock Eagle orientation camp period. Here the results are inconclusive. During the first year this study was made, significant Chi-Squares were obtained for the first two days of Freshman Camp when volume of contact during those days was measured and later compared against the Freshman average received after a year in college. The third day yielded that insignificant Chi-Squares were obtained for the first three days of Freshman camp indicating that no relationship existed between the volume of contact the people had at Freshman Camp and their ultimate Freshman average.

Two things should be noted with respect to these data. The data on volume of contact were taken at the very beginning of the subject's college career on the first three days of

Freshman orientation week. The Freshman average to which this volume of contact is compared was obtained some months later, after they had established an academic record. In a sense then, these tests represent an attempt to determine whether one could predict the Freshman average on the basis of the volume of association at Freshman Camp. The first year's data seemed to indicate that this indeed might be the case. The second year's data, however, contradict this conclusion, and show no relationship between volume of contact in Freshman Camp and the Freshman average obtained after a year of academic work.

This leads to the second point that should be noted. The first year's study was done with little notice given to the persons running the Freshman Camp. They were not aware of its purposes or the basic hypothesis guiding the study. By the time the second year's study was performed, persons involved in the Freshman Camp were familiar with the purposes of the study, and may have influenced subjects to record higher volumes of contact. It was the feeling of the researchers that Freshman Camp counselors, during the second year, encouraged their charges to make a good record in becoming acquainted with each other. During the first year, this factor did not enter into the study. It is believed that, as a result, data obtained during the Freshman Camp period on the second year is not as useful in testing the hypothesis stated in this study as that obtained

during the first year when subjects were not naive about the purposes of the research, and therefore unable to bias their questionnaire responses.

This fits in with the results obtained on the post camp questionnaire, which was given some nine months later. This questionnaire was given to subjects in their dormitories or fraternity houses, or wherever they were residing on the campus. No cross communications could easily occur between subjects at that time; nor could a single person or group of persons influence the nature of their responses.

A Chi-Square was also computed for the post camp questionnaire for the first year and compared to the Sophomore averages obtained by these subjects. In this case, a Chi-Square of 2.67 was obtained with one degree of freedom. This Chi-Square falls between the 10 and 20 percent level of significance near the 10 percent figure of 2.71. No such statistics could be obtained for the second year's study because subjects had not completed their Sophomore year when data collection for this research was completed.

The Spearman's correlation coefficients were computed between the Freshman average obtained by each subject and a number of contacts reported for him on the post camp questionnaire. This revealed a significant positive correlation between Freshman average and number of contacts. For the first year, the Spearman "R" was

.2330 with a "T" test of significance of the difference between it and random results of 2.44 with 106 degrees of freedom. For the second year's research, the Spearman correlation coefficient was .2656 with a "T" of 3.21 and 139 degrees of freedom. These two correlation coefficients, along with the significant Chi-Squares, tend to point to a relationship between the volumes of associations that students in college build up during their Freshman year and the performance that they obtain on academic averages. Higher levels of performance seem to be associated with higher levels of contact. Obviously, the relationship between performance and volume of contact is rather small as indicated by the size of the "R's"; yet it is significant.

In addition to the measured performance in the form of the student's Freshman average, achievement and aptitude tests were available. These achievement and aptitude tests were taken from the college entrance examination board as administered and graded by the Educational Testing Service at Princeton, New Jersey. They were broken down into four scores: the Verbal Entrance Score; the Quantitative Entrance Score; the English Achievement Score and the Math Achievement Score. These scores were divided into high and low categories and compared with high and low volumes of contact for the post camp schedule given to subjects on the two years covered by this research. This yielded a series of 2 x 2 Chi-Square

Tables; the results of which are reported in Table 3. As can be seen from Table 3, only one significant Chi-Square and no significant correlation coefficients were obtained. This would indicate that the level of aptitude and the level of achievement as measured by the college entrance boards was not related to the volume of contacts that students had after one year in college. Similar results from these same variables were obtained on the first three days of Freshman Camp and need not be further reported here.

Associational Similarity

Persons who listed each other as contacts or associates for this research were compared with each other on various measures of ability, performance and attitudes. This was done to determine whether individuals tend to associate with others who are similar or dissimilar to themselves, and to test indirectly the hypothesis that the persons with whom an individual associates has an affect on his performance. To do this, the distribution of scores on each measure of ability, performance and attitude were divided into quartiles; each individual assigned a quartile score ranging from one to four. Thus, if an individual was in the lowest quartile on high school average, he was assigned the score of (1), representing the first quartile. If he were in the highest quartile, he was given a score of (4), and so forth. Individuals who listed each other as contacts were then compared in terms of the quartile they fell in on

each measure. This comparison was done by a process of subtracting the score of a person named from the score of the person naming him. When this was done, four possible values (ignoring sign) were obtained. If they were in the same quartile, the value zero resulted. If they were one quartile apart, the value of (1) was obtained; if they were two quartiles apart, a value of (2) was obtained; and if they were three quartiles apart, the maximum difference, a value of (3) was obtained. In other words, a similarity score ranging from zero to four resulted from this process. Tables were then constructed showing the frequency distributions of scores for all contacts occurring among subjects on each of the measures of ability, performance and attitude. This same process was followed for each questionnaire period so that similarity scores were computed for the first, second and third day and for the various post camp questionnaire periods.

Table 4 shows the way in which Chi-Square tests were used in dealing with distributions of difference among subjects. In the first row in Table 4, the figures 134, 154, 103, and 55 show the number of contacts which involve various amounts of difference between the subjects in contact. For example, 134 of the contacts were between people who fell in the same quartile on their cumulative Freshman average. One hundred and fifty-four contacts were between people who fell one quartile apart in their Freshman average.

One hundred and three contacts involved people who fell two quartiles apart in the Freshman average, and fifty-five involved people who were three quartiles apart. In the second row of the Table, figures are shown which represent the theoretical expected frequency based on the probability of these combinations of differences occuring by chance. In other words, line two represents the frequency that would be expected if chance alone operated to distribute the total number of contacts among the four categories. A Chi-Square was computed for this table of 6.24. This Chi-Square has three degrees of freedom, and would be significant at the ten percent level. If a ten percent level of significance were accepted, the conclusion would be drawn that the distribution of similarities and differences among subjects observed in this study could not reasonably be accounted for by chance variation.

Table 5 presents the same kind of Chi-Square comparisons for all of the performance variables and for all of the aptitude variables used in this study for the first and the second year. It will be noted that in the second year, the Chi-Square comparable to that discussed above was 18.16, again with three degrees of freedom and was significant at the .005 level. Taken together, these two Chi-Squares tend to indicate that persons with similar performance levels associate with each other. This can be seen by examining the observed frequency on the two years as compared to the theoretical frequency

as shown in Table 4.

The remainder of the results in Table 5 present an inconsistent picture of the relationship between measures of aptitude and achievement and association patterns. During the first year, greater than the expected number of people with similar Quantitative Entrance Scores, associated with each other indicating some tendency for persons with quantitative ability or lack of such ability to choose each other as associates. During the second year, this same tendency did not hold up however, although the figures indicated in the same direction that occurred in the first year. The Verbal Entrance Score, the English Achievement Score and the Math Achievement Score during the first year did not prove to be a factor in choosing associates. Also surprisingly, during the first year, the cumulative Sophomore average did not seem to be involved in choice of associates. In the second year, both English Achievement and Math Achievement seem to enter into choice of associates. In both cases, more than the expected number of people chose persons similar to themselves in these scores during the second year's experiment. On the basis of the data presented in Table 5, it does not seem wise to conclude at this point that measures of aptitude and performance have a great effect on the choice of persons as associates. It is probably true that much more powerful factors than these operate to overcome or blank out any possible effect that these attributes have on choice

of associates. For example, residential propinquity at Rock Eagle or in a dormitory or fraternity house is probably the single most important factor in bringing about association patterns on the college campus. These residential patterns are not necessarily related to level of aptitude. There is some indication in these data to the effect that aptitude variables may have a mild influence on choice of associates. This could only be determined by very carefully controlled use of an analysis of a variance technique to parcel out the effects of various factors on choice of associates. The data available here will not permit the use of this technique at this time.

Social Participation in Academic Performance

Two measures of social participation were obtained in data collected for this study. These can be compared to academic performance. One measure consists of the number of organized groups and organizations to which subjects belonged after a year in college. These data were obtained by asking subjects to name on their questionnaires every organized group in which they were a member. The score consists of a simple count of the number of organizations in which the person had held membership. The second measure simply compares persons who belong to college sororities and fraternities to those who do not belong to such groups.

Table 6 shows the results of Chi-Square tests performed between social participation scores and the various measures of

aptitude and performance employed in this research. Like the Chi-Square tests used earlier, these compared persons who were categorized high and low in social participation to their categorization as high and low on the performance variable. As can be seen from Table 6, no significant Chi-Squares were obtained between social participation and performance or aptitude. The conclusion must, therefore, be reached that membership in organizations on the college campus has little or no relationship to the level of performance obtained by students during their Freshman and Sophomore years nor to their level of aptitude or achievement.

Table 7 shows the same kinds of results for fraternity and sorority membership and non-membership. Here again, not a single significant Chi-Square was obtained. This seems to indicate for this population at least, that membership or non-membership in sororities and fraternities is not related to measures of performance and aptitude. This holds for both years during which the study was performed.

On the basis of these two Tables, the conclusion has to be drawn that membership and non-membership in organized groups on the college campus does not seem to be related to the level of performance or the level of abilities of students in the college population studied. Similar types of tests were run between persons with high levels of contact with persons of the opposite sex as

compared with persons of low levels of contacts with the opposite sex. Again, not a single significant Chi-Square was obtained for the various measures of performance or aptitude.

Closure and Academic Performance

A second dimension of the major hypothesis for this research involved the idea that change in association patterns over time would be associated with academic performance. In order to conceptualize change in association patterns over time, a concept of "closure" was defined. Closure for an individual amounts to getting to know or forming associations with every person in the population which is under study. In the case of the Rock Eagle Freshman Camp, closure would be reached by a given individual when he had formed associational patterns with every other Freshman camper.

The greater number of persons an individual gets to know out of a closed population, the closer he is to reaching closure. The rate at which persons approach closure will vary. Rate of closure amounts to the number of associates that are added to a person's associational network in a given time period. At Freshman Camp, for example, some persons got to know a large number of people on the first day, a larger number on the second day, and by the third day approached closure. Others had a different rate at which they approached closure getting started very slowly and adding contacts at a slower rate.

In this research, an attempt was made to measure the rate at which individuals approached closure. This was done by taking a ratio between the number of contacts a person had on the first day as compared by the number that he had the second day and as compared to the number he had the third day and so forth for the various questionnaire intervals. A person with a very high closure rate would have a low ratio between the number of persons he knew the first day and the number he knows on the last day in which closure is measured.

It was hypothesized for this research that persons who get to know people rapidly (have high closure rates) would outperform those who moved slowly toward closure.

A series of Chi-Square tests were run between measures of performance and closure rate using various periods of time in which closure was measured.

No relationship was found using any method of measuring closure between it and measures of performance such as cumulative Freshman or Sophomore average, or high school average nor between it and measures of aptitude such as Verbal Entrance, Quantitative Entrance, English Achievement and Math Achievement Scores. In other words, this study does not show any tendency for the rate at which people become acquainted to be related with either their aptitudes and abilities or their level of performance.

Table 8 gives a sample of the type of result obtained for closure. This particular Table measures closure by a ratio of a number of contacts a person established on the first day at Freshman Camp to those he had in the post camp questionnaire. Persons were classified as high or low in closure rate and then high or low on the aptitude and performance variables and then a Chi-Square test was run. The results are shown in Table 8.

Conclusions and Implications

This research project was carried on over a two-year period. It compared the results of the same study repeated on successive years on similar populations to each other. The data obtained during the two successive studies seem to show that there is a weak relationship between the association patterns a college student establishes after entrance into college and the level of performance that he obtains in college. This relationship between pattern of association and performance is embedded in a complex network of other relationships. Other factors than associational pattern enter strongly into the individual's attainment of a performance level and tend to mask the effects of associational patterns. The particular way in which this study was conducted using students who attended Freshman Camp limited seriously the exploration of total associational patterns on the college campus. The associations studied here are associations within a closed population of Freshman

Campers which were established prior to their entrance into the college community. In other words, persons who attended a Freshman Orientation Camp established association patterns with each other during this period of orientation. These associations were studied over a year's time. Many other association patterns were established by the subjects studied during the time covered by this research with persons who did not attend Freshman Camp. Data on these individuals with whom Freshman Campers associated, but who were not at Freshman Camp, could not be obtained for this particular research project. It is probably true that were such data available, the relationship between associational patterns and performance would show up to a much greater degree than displayed in this particular project. In other words, the way in which these data were obtained placed limits on hypotheses testing. The research design was highly conservative with respect to the hypotheses under study. For example, only the highest qualified group of students was studied. This meant that the probable variability in performance observed was quite small as compared to the general population of college freshmen. This study indicated that even among the most highly qualified entering freshmen, variations in the volume of association are related to the freshman average they attain. It also shows that among this top group, people who attain similar performance levels tend to associate with each other.

It is felt that if even a weak relationship between associational patterns and performance shows up under the conditions which pertained in this research project, a much more powerful relationship would be discovered if a different research design were employed.

This different research design would involve studying the associates of a sample of college students not limiting the population to a dormitory or a Freshman Camp population, but instead to the entire college community. This process would be much more costly to carry out because of the mechanics of processing associational data. It would, however, settle to a more decisive degree the question of whether associational patterns have a powerful, weak, or no influence on the level of performance of college students.

TABLE 1

NUMBER OF SUBJECTS WHO HAD HIGH AND LOW FRESHMAN AVERAGES CLASSIFIED BY VOLUME OF CONTACT

YEAR I	FRESHMAN AVERAGE		
Volume of Contact Post Camp	High	Low	Total
High	31	17	48
Low	16	33	49
Total	47	50	97
YEAR II			
Volume of Contact Post Camp			
High	40	27	67
Low	27	41	68
Total	67	68	135

TABLE 2

CHI-SQUARES FOR COMPARISON OF VOLUME OF ASSOCIATION CLASSIFIED BY FRESHMAN AVERAGE

TIME	YEAR 1	YEAR 2
Day 1	$X^2 = 5.46$ *	$X^2 = .03$
Day 2	$X^2 = 4.79$ *	$X^2 = .51$
Day 3	$X^2 = .51$	$X^2 = .27$
Post Camp	$X^2 = 10.05$ *	$X^2 = 5.48$ *

*Significant at the .05 level with 1 d.f.

TABLE 3

RELATIONSHIP OF VOLUME OF ASSOCIATION TO
MEASURES OF APTITUDE AND ACHIEVEMENT
AS INDICATED BY CHI-SQUARE AND
SPEARMAN CORRELATION COEFFICIENTS

Aptitude Measures	YEAR 1			YEAR 2		
	X^2	r	t	X^2	r	t
Verbal Entrance	4.63*	.0981	1.01	.92	.1108	1.31
Math Entrance	2.38	.1373	1.41	.20	.0793	.93
English Achievement	1.85	-.0475	-0.48	.38	.0584	.68
Math Achievement	1.12	-.0322	- .33	.00	.0995	1.17

TABLE 4

OBSERVED AND EXPECTED FREQUENCY OF DIFFERENCES AMONG PERSONS NAMED AS ASSOCIATES ON THEIR CUMULATIVE FRESHMAN AVERAGE FOR BOTH STUDY YEARS

YEAR I	Quartile Differences Between Associates 0	1	2	3	Total
Number of Associations or Contacts Observed	134.00	154.00	103.00	55.00	446
Number of Associations or Contacts Expected by Chance	111.50	167.25	111.50	55.75	446
Difference (Observed-Expected)	22.50	-13.25	-8.50	-.75	0
	$X^2 = 6.24$, 3 d.f.				
YEAR II	0	1	2	3	Total
Number of Associations or Contacts Observed	237.00	352.00	207.00	70.00	866
Number of Associations or Contacts Expected	216.50	324.75	216.50	108.25	866
Difference (Observed-Expected)	+20.50	+27.25	-9.50	-38.25	0
	$X^2 = 18.16$, 3 d.f.				

TABLE 5

CHI-SQUARES SHOWING DEVIATION FROM CHANCE PATTERN IN SIMILARITY AND DIFFERENCES BETWEEN PERSONS WHO ASSOCIATE WITH EACH OTHER ON VARIOUS PERFORMANCE AND APTITUDE MEASURES

Performance and Aptitude Measures	CHI-SQUARES YEAR I Chi. Sq.	Sign Level	YEAR II Chi. Sq.	Sign Level
High School Average	1.33		——*	
Verbal Entrance	2.32	(.05)	5.75	
Quant. Entrance	7.80		4.13	
English Achievement	2.82		12.27	(.01)
Math Achievement	.45		9.71	(.0025)
Cumulative Freshman Average	6.24	(.10)	18.16	(.005)
Cumulative Sophomore Average	.46		——*	

*Measures not available

TABLE 6

COLLEGE SOCIAL PARTICIPATION AS COMPARED TO MEASURES OF ACADEMIC PERFORMANCE AND APTITUDE

Performance and Aptitude Variables	Chi-Squares Obtained Between Participation Score and Variables Listed at Left: Year I	Year II
High School Average	2.53	____*
Verbal Entrance	1.80	1.86
Quantitative Entrance	0.05	2.43
English Achievement	2.27	1.88
Math Achievement	0.02	0.04
Cumulative Freshman Average	2.22	0.04
Cumulative Sophomore Average	2.53	____*

*Measures not available

TABLE 7

SORORITY-FRATERNITY MEMBERSHIP COMPARED TO MEASURES OF PERFORMANCE AND APTITUDE

Performance and Aptitude Variables	Chi-Squares Obtained Between Sorority-Fraternity Membership and Measures of Performance and Aptitude Listed at Left. Year I	Year II
High School Average	1.36	____*
Verbal Entrance	1.87	0.07
Quantitative Entrance	0.05	0.01
English Achievement	1.85	1.09
Math Achievement	1.02	0.07
Cumulative Freshman Average	0.75	0.84
Cumulative Sophomore Average	0.48	____*

*Measures not available

TABLE 8

CLOSURE RATE COMPARED TO MEASURES OF PERFORMANCE AND OF APTITUDES

Chi-Squares

Performance and Aptitude Variables	Year I	Year II
High School Average	.94	*
Verbal Entrance	.04	1.62
Quantitative Entrance	.95	.87
English Achievement	.04	.02
Math Achievement	.04	.94
Cumulative Freshman Average	.77	.03
Cumulative Sophomore Average	2.04	*

*Measures not available

APPENDIX A

SUMMARY FREQUENCY DISTRIBUTIONS OF POPULATION CHARACTERISTICS

TABLE 1

Sex of Subjects by Year

	FREQUENCY		
SEX	YEAR I	YEAR II	TOTAL
MALES	55	70	125
FEMALES	52	70	122
TOTAL	107	140	247

TABLE 2

Total Number of High School Clubs
Subjects Listed as Belonging to by Year

	FREQUENCY		
Number of High School Clubs	YEAR I	YEAR II	TOTAL
No Response	1	8	9
Less than 5	20	26	46
5 - 9	70	70	140
10 - 14	15	30	45
15 or more	1	6	7
Total	107	140	247

APPENDIX A - Continued

TABLE 3

Total Number of College Clubs
Subjects Listed as Belonging to by Year

	FREQUENCY		
Number of College Clubs	YEAR I	YEAR II	TOTAL
No Response	24	54	78
Less than 3	26	44	70
3 - 5	36	39	75
6 - 8	17	3	20
9 - 11	4	0	4
Total	107	140	247

TABLE 4

Number of Times Subjects Were Listed
as Associates by Others by Year

	FREQUENCY		
Number of Times Listed	YEAR I	YEAR II	TOTAL
No Response	28	2	30
Less than 5	27	38	65
5 - 9	28	56	84
10 - 14	10	20	30
15 or more	14	24	38
Total	107	140	247

APPENDIX A - Continued

TABLE 5

High School Average of
Subjects by Year

	FREQUENCY		
High School Average	YEAR I	YEAR II*	TOTAL
No Response	1	———	1
Less than 2.6	0	———	0
2.6 - 3.5	29	———	29
3.6 - 4.5	77	———	77
Total	107	———	107

*Measures not available for Year II

TABLE 6

Cumulative Freshman Average of
Subjects by Year

	FREQUENCY		
Cumulative Freshman Average	YEAR I	YEAR II	TOTAL
No Response	6	5	11
Less than 78.1	8	17	25
78.1 - 83.0	16	33	49
83.1 - 88.0	43	39	82
88.1 - 93.0	31	35	66
93.1 - 98.0	3	11	14
Total	107	140	247

APPENDIX A - Continued

TABLE 7

Cumulative Averages of Subjects
After Sophomore Year by Year

Cumulative Average After Sophomore Year	FREQUENCY		
	YEAR I	YEAR II*	TOTAL
No Response	11	——	11
Less than 78.1	10	——	10
78.1 - 83.0	19	——	19
83.1 - 88.0	39	——	39
88.1 - 93.0	25	——	25
93.1 - 98.0	3	——	3
Total	107	——	107

*Measures not available for Year II

TABLE 8

Verbal Aptitude Scores
of Subjects by Year

Verbal Aptitude Scores	FREQUENCY		
	YEAR I	YEAR II	TOTAL
No Response	1	1	2
Less than 400	0	1	1
400 - 499	16	27	43
500 - 599	43	57	100
600 - 699	40	48	88
700 or more	7	6	13
Total	107	140	247

APPENDIX A - Continued

TABLE 9

Quantitative Aptitude Scores
of Subjects by Year

Quantitative Aptitude Scores	FREQUENCY		
	YEAR I	YEAR II	TOTAL
No Response	1	1	2
Less than 400	0	2	2
400 - 499	13	20	33
500 - 599	47	54	101
600 - 699	36	52	88
700 or more	10	11	21
Total	107	140	247

TABLE 10

English Achievement Scores
of Subjects by Year

English Achievement Scores	FREQUENCY		
	YEAR I	YEAR II	TOTAL
No Response	5	4	9
Less than 400	3	1	4
400 - 499	16	23	39
500 - 599	37	56	93
600 - 699	37	45	82
700 or more	9	11	20
Total	107	140	247

APPENDIX A - Continued

TABLE 11

Math Achievement Scores
of Subjects by Year

	FREQUENCY		
Math Achievement Scores	YEAR I	YEAR II	TOTAL
No Response	5	4	9
Less than 400	1	8	9
400 - 499	30	39	69
500 - 599	48	44	92
600 - 699	22	40	62
700 or more	1	5	6
Total	107	140	247

APPENDIX B

PRE-CAMP QUESTIONNAIRE

NAME_____
(Last) (First) (Middle) (Nicknames)

HOME ADDRESS_____
CAMPUS ADDRESS_____
(Dorm) (Room No.)

OFF CAMPUS ADDRESS_____
DATE_____ EDITED BY_____
DATE EDITED_____

Col.	Item	Data
	Record No._____	
	High School Attended_____	
	Sex_____	
	Age_____	
	County of Residence_____	
	Locality (Check one): Rural__ Rural Nonfarm__ Urban___	
	Father's Occupation_____	
	Father's Education_____	
	Mother's Occupation_____	
	Mother's Education_____	
	No. of Persons in Household_____	
	Relatives now enrolled at the University of Georgia: (Names of relatives):	
	Brothers_____	
	_____	
	_____	
	_____	
	Sisters_____	
	_____	
	_____	
	_____	
	None_____	
	Other (Explain)_____	
	_____	
	_____	
	Intended Major in College_____	

APPENDIX B - Continued

NAME_____
(Last) (First) (Middle) (Nicknames)

In the spaces provided below, please list all of the organizations in your school and community to which you belonged last year. (Don't include organizations outside your school and community such as State or National organizations.) Include clubs, church groups, or any other organized groups.

Col.	Item	Data
	Academic:	
	Sports:	
	Religious:	
	Music:	
	Social:	

APPENDIX B - Continued

POST-CAMP QUESTIONNAIRE

NAME_____
(Last) (First) (Middle) (Nicknames)

In the spaces provided below, please list all of the organizations to which you belonged this year. Include clubs, fraternities, sororities, honorary societies, church groups, and any other organized groups. Indicate whether you were an officer or not.

Col.	NAME OF ORGANIZATION	OFFICER Yes	No

APPENDIX B - Continued

List below the names of people who were with you at the Rock Eagle Freshman Camp that you have spent at least an hour with since school started this year. Do not count being in the same class as spending time together. Count only occasions when you could talk with each other about various things which interest you. After listing the name check the space which indicates the amount of time you spend with the person listed.
NOTE: If you need more space you may use the back of this sheet.

NAME	Time Spent With Them			
	At least an hour a day	Two or three hours a week	About an hour a week	Less than an hour a week
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

APPENDIX B - Continued

NAME_____

DORMITORY_____ROOM NO._____

PROPOSED MAJOR SUBJECT OF STUDY_____

List below the names of your closest friends here at the University of Georgia. Even though one of your close friends may have been listed on the previous page, please list them again below. Next, check the space provided which shows how much time you spend with them on an average. Please avoid nicknames and give full name if possible.

NAME	Time Spent With Them			
	At least an hour a day	Two or three hours a week	About an hour a week	Less than an hour a week
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

APPENDIX B - Continued

NAME_____
(Last) (First) (Middle) (Nicknames)

Below are some statements which cover a wide variety of subjects relating to local and national affairs. After reading all of the statements, (A thru I), indicate:

1. The statement most favorably in accord with your own position._____
2. Other statement(s) which are not objectionable to you._____
3. The statement which is most objectionable to you._____
4. Other statement(s) which are objectionable to you._____

In your response please consider all of the statements.

A. Since people usually reside, work and maintain friendships within the environment of a community or city, it is their duty that their main concern be over the problems and events which occur in their particular community, even if this means excluding all concern over national or world problems and events.

B. Since people usually spend the majority of their time within the confines of their community, their interest in local affairs should come first, but because problems and events of a national or international nature may affect the local community, people should maintain some interest in them.

C. Although a person's concern should be over local problems and events, it is also his duty to seek out and maintain a substantial interest in affairs which although national or even world-wide in scope, will affect his community.

D. Because a person's community is part of a larger society, he should maintain a substantial interest in problems and events which occur on a national or world level, but in a manner that will not be detrimental to his interest in local affairs.

E. A person should maintain an amount of interest in local affairs that is equal to the interest he maintains in national and international affairs.

F. Local citizens should maintain an intensive interest in community affairs, but their interest in national and world affairs should be their primary concern.

(continued on next page)

APPENDIX B - Continued

G. Although a person's primary concern should be over national and international affairs, it is also his duty to maintain substantial interest in local problems and events, but in a manner which will not narrow his interest in the affairs of the larger society.

H. A person should maintain a minimum of interest in local affairs, but as he is first and foremost a member of the larger human community, his interest in national and world affairs should be his primary concern.

I. Although people reside in communities, the community is merely a small part of a larger society; a person's interest, therefore, should be focused on the problems and events which occur on a national and international level, even to the extent of excluding local occurrences from his field of interest.

APPENDIX B - Continued

NAME_____
(Last) (First) (Middle) (Nicknames)

1. In spite of what some people say, the lot of the average man is getting worse.

Strongly Agree_____
Agree_____
Undecided_____
Disagree_____
Strongly Disagree_____

2. It's hardly fair to bring children into the world with the way things look for the future.

Strongly Agree_____
Agree_____
Undecided_____
Disagree_____
Strongly Disagree_____

3. Nowadays a person has to live pretty much for today and let tomorrow take care of itself.

Strongly Agree_____
Agree_____
Undecided_____
Disagree_____
Strongly Disagree_____

4. These days a person doesn't really know who he can count on.

Strongly Agree_____
Agree_____
Undecided_____
Disagree_____
Strongly Disagree_____

5. There's little use writing to public officials because often they aren't really interested in the problems of the average man.

Strongly Agree_____
Agree_____
Undecided_____
Disagree_____
Strongly Disagree_____